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10/019,125	05/10/2002	Yasuharu Asano	450101-03685	9907

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EXAMINER	
WOZNIAK, JAMES S	
ART UNIT	PAPER NUMBER
2626	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/019,125	ASANO ET AL.	
	Examiner	Art Unit	
	JAMES S. WOZNIAK	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 May 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the office action from 12/17/2007, the applicant has submitted an amendment, filed 3/14/2008, amending claims 2-5 to overcome a previous claim objection, while arguing to traverse the art rejection based on the limitation regarding selecting first word candidates based on acoustic and language scores and second word candidates not based on the acoustic score *(Amendment, Pages 8-12)*. Applicant's arguments have been fully considered, however the previous rejection is maintained due to the reasons listed below in the response to arguments.

2. In response to amended claims 2-5, the examiner has withdrawn the previous objection directed to minor informalities.

Response to Arguments

3. Applicant's arguments have been fully considered but they are not persuasive for the following reasons:

With respect to **claims 1, 8, and 9**, the applicant argues that Higgins et al *(U.S. Patent: 5,218,668)* fails to teach selection of first candidate words based on an acoustic and language

model score because Higgins only teaches that a first type of candidate is selected based on a matching algorithm using a keyword template.

In response, the examiner notes that Higgins does rely on acoustic and language model scores in selecting a first type of speech recognition candidate. More specifically, Higgins teaches that a first word is selected by comparing input speech to a keyword template model which results in an acoustic distance or score indicating closeness of a spoken input to a template *(Col. 4, lines 49-66; and Col. 6, Lines 16-46)*. Higgins then further notes that word candidates are compared to a language model in the form of a finite-state-syntax to constrain the set of allowable first word candidates *(Col. 8, Lines 18-26)*. Thus, Higgins bases his first word candidate selection on an acoustic and language model comparison scheme as he relies on matching/comparison with acoustic keyword models and syntactical language models. Higgins also makes the speech recognition structure well known in the art wherein recognition can be performed by selecting two different word candidate sets *(second "filler" word candidates, Col. 4, Lines 49-66; and Col. 6, Lines 16-46)*. It can be seen, therefore, that the structure of Higgins system/method is similar to the applicant's invention with the exception that Higgins' filler model scores also rely on acoustic matching. Using other types of scores for model selection, however, is well known in the speech processing art, however, as is evidenced by the teachings of Hon et al *(U.S. Patent: 5,963,903)*.

Hon teaches that "measures other than acoustic model probability" can be utilized in selecting speech recognition candidates *(Col. 10, Lines 16-51)*. Hon also notes a benefit can be realized from such processing in the form of improved accuracy that does not require a user to speak a large number of words in training *(Col. 5, Lines 15-36)*. Thus, since Higgins makes it

known that alternative candidates for speech recognition can be selected and Hon provides different measures for that candidate selection which have an associated benefit that would be clear to one of ordinary skill in the art, the prior art combination is proper. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning *(Amendment, Page 11)*, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper *(as per the Higgins and Hon references-see above)*. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies *(i.e., selecting adjuvants based on specific acoustic characteristic values)* are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The art rejection of the dependent claims is traversed for reasons similar to the independent claims *(Amendment, Page 12)*. In regards to such arguments, see the above response directed towards the independent claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claim 1-2 and 7-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al *(U.S. Patent: 5,218,668)* in view of Hon et al *(U.S. Patent: 5,963,903)*.

With respect to **Claims 1 and 8**, Higgins discloses:

Extraction means for extracting characteristic values of said input speech, the input speech comprising a plurality of input words *(speech parameter extraction, Col. 5, Lines 45-63; and input speech corresponding to a word sequence, Col. 6, Lines 16-46)*;

Selection means for selecting one or more candidate first words from the plurality of input words to be processed by speech recognition processing, based on a word score that represents an evaluation of acoustic scores and language scores calculated using said characteristic values *(determining a first word hypothesis set based on a matching algorithm utilizing a keyword template, Col. 4, Lines 49-66; Col. 6, Lines 16-46; and syntax language models, Col. 8, Lines 18-26)*, and for selecting one or more candidate second words from the plurality of input words based on a second measure different from said first measure *(determining a second word hypothesis set based on a matching algorithm utilizing a filler template relating to keywords, Col. 4, Lines 49-66; and Col. 6, Lines 16-46)*;

Score calculation means for calculating said score of said candidate first and candidate second words selected by said selection means referencing concatenation information of said first and second words *(scoring a template string from a concatenation of partial strings of existing candidates located in a phrase buffer with current template candidates, Col. 6, Lines 16-46; and Col. 8, Line 9- Col. 9, Line 65)*; and

Finalizing means for finalizing a words string, as the recognition result of said speech based on said score *(finalized recognition output corresponding to a string of most likely word templates, Col. 6, Lines 63-67; and finalizing phrase recognition, Col. 9, Lines 26-54)*, wherein the word concatenation information is sequentially updated based on the score *(accumulating scores for partial strings by further concatenating candidates for a current frame to the existing partial strings to produce an updated score, Col. 6, Lines 16-46)*.

Although Higgins teaches the selection of alternative speech recognition candidates corresponding to smaller speech units, Higgins utilizes an acoustic distance algorithm in order to make such a selection. Hon, however, teaches several types of non-acoustic ranking for selection of phoneme recognition candidates *("measures other than acoustic model probability", Col. 10, Lines 16-51)*.

Higgins and Hon are analogous art because they are from a similar field of endeavor in speech recognition. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Higgins with the ranking and selection means taught by Hon in order to implement an alternative speech recognition approach having improved accuracy that does not require a user to speak a large number of words in training *(Hon, Col. 5, Lines 15-36)*.

With respect to **Claim 2**, Hon further discloses:

A means for a non-acoustic ranking and selection of phoneme recognition candidates in a word through a phoneme misrecognition count (*Col. 10, Lines 16-51).*

With respect to **Claim 7**, Higgins recites:

The selection means calculates said score using characteristic values of the speech to select said first word based on said score *(extracted speech parameters used in keyword template matching, Col. 5, Lines 45-63; and Col. 6, Lines 16-21).*

6. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al in view of Hon et al and further in view of Chiang et al *("On Jointly Learning the Parameters in a Character-Synchronous Integrated Speech and Language Model," 1996).*

With respect to **Claim 3**, Higgins in view of Hon teaches the speech recognition system utilizing keyword and alternative model matching to generate candidate hypotheses in recognizing an input speech sequence, as applied to claim 1. Higgins in view of Hon does not teach the use of an alternative hypothesis scoring means related to related to a part-of-speech, however Chiang teaches an HMM based recognizer that utilizes part-of-speech tags in scoring to determine a best recognition hypothesis *(Page 168, Fig. 1).*

Higgins, Hon, and Chiang are analogous art because they are from a similar field of endeavor in speech recognition. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Higgins in view of Hon with the scoring means related to a part-of-speech tag as taught by Chiang in order to achieve an

alternative recognition measure having an improved recognition rate and a reduced error rate *(Chiang, Page 168)*.

7. **Claims 4 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al in view of Hon et al and further in view of Franz et al *(U.S. Patent: 6,178,401)*.

With respect to **Claim 4**, Higgins in view of Hon teaches the speech recognition system utilizing keyword and alternative model matching to generate candidate hypotheses in recognizing an input speech sequence, as applied to claim 1. Higgins in view of Hon does not teach the use of an alternative hypothesis scoring means related to a linguistic likelihood, however Franz discloses the use of a language model that determines a score based on linguistics *(Col. 6, Line 42- Col. 7, Line 6)*.

Higgins, Hon, and Franz are analogous art because they are from a similar field of endeavor in speech recognition. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Higgins in view of Hon with the scoring means related to a linguistic likelihood as taught by Franz in order to provide an alternative recognition means that enhances the probability of selecting a correct recognition candidate *(Franz, Col. 6, Line 61- Col. 7, Line 6)*.

With respect to **Claim 9**, Franz further recites implementing a speech recognition method as a program stored on a computer readable medium to enable method implementation on one or more general purpose computers *(Col. 2, Lines 42-67)*.

8. **Claims 5-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins in view of Hon et al and further in view of Holt et al *(U.S. Patent: 5,960,447)*.

With respect to **Claim 5**, Higgins in view of Hon teaches the speech recognition system utilizing keyword and alternative model matching to generate candidate hypotheses in recognizing an input speech sequence, as applied to claim 1. Higgins in view of Hon does not teach the use of a storage means for memorizing speech recognition results and using the results in a subsequent alternative recognition, however Holt discloses a means for storing a confidence score from a recognition engine for use in a speech recognition process *(Col. 9, Lines 7-61)*.

Higgins, Hon, and Holt are analogous art because they are from a similar field of endeavor in speech recognition. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Higgins in view of Hon with the confidence score storage means taught by Holt in order to provide an improved alternative speech recognition means for editing and correcting speech recognition results *(Holt, Col. 1, Line 65- Col. 2, Line 21)*.

With respect to **Claim 6**, Holt further recites:

Inputting means for providing an input for correcting the results of speech recognition; wherein said storage means stores the results of the speech recognition corrected by the input from said inputting means *(editing a recognition result and updating a confidence score, Col. 9, Lines 36-61)*.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached at (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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